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Hesperotherium(黄昏兽) ——后期爪兽一新属[1)]

邱占祥
(中国科学院古脊椎动物与古人类研究所　北京　100044)

摘要　记述了山西天镇早更新世爪兽一新属 ——*Hesperotherium*。新属为低冠中等大小的爪兽,主要鉴别特征是:吻部极度缩短,门齿、犬齿和第一前臼齿消失,前臼齿高度退缩,上臼齿宽大于长,原尖孤立,下臼齿后齿带发育。这是爪兽科最后的代表。中国过去在晚上新世至早更新世地层中发现的 *Nestoritherium*,很可能都应该归入这个新属。这个属的化石目前仅发现于中国。

关键词　山西天镇,上新世—更新世,爪兽
中图法分类号　Q915.876

2000 年 10 月 14 日笔者有幸在卫奇研究员的陪同下参观了笔者向往已久的山西天镇哺乳动物化石地点。同行的还有裴树文和天镇文管所所长田雨来先生。天镇地区的哺乳动物化石是卫奇等于 20 世纪 80 年代初在河北泥河湾盆地工作期间发现并作了多次发掘,获得了相当丰富的哺乳动物化石,但一直没有正式研究发表。该化石分布区位于山西天镇境内,在县城东南约 35km 处,邻接山西与河北省省界,在台家坪和水冲沟之南 1～3km 的范围内。由于离泥河湾很近,化石既有与典型泥河湾动物群相同的,也有时代上多少有些差异者,所以早就引起了我国古生物学家的注意。在参观过程中,我们在原 80045 野外地点(动物群与泥河湾者大体一致)现场发掘出少量哺乳动物化石,其中有一段爪兽类的下颌和上牙。这一发现十分重要,它使我们第一次真正了解了我国新生代晚期这类爪兽的特殊性质。

爪兽化石在我国晚新生代,特别是第四纪初期的地层中发现的数量非常稀少。这无疑和新生代晚期气候变干变冷有关。气候的恶化使这类以树叶为主要食物的奇蹄动物趋向灭亡。由于化石非常稀少,大多是零散的牙齿,这使我们对这类动物的真正性质一直不能肯定。过去所有在我国上新世晚期至更新世早、中期发现的爪兽(盐井沟、泥河湾、蓝田公王岭、巫山龙骨坡等)几乎无一例外地都被归入到 *Nestoritherium* 属中。由于这一时期其他爪兽已经灭绝,*Nestoritherium* 是当时惟一的已知属,在材料很少的情况下,归入这个属是比较可行的一种办法。天镇新发现的材料却表明,它和 *Nestoritherium* 并不是同一类动物,其独特的性质足以使我们为它建立一个新属:*Hesperotherium*。很可能,过去我国所有归入这个属的材料全都应该归入这个新属。

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1 系统记述

奇蹄目 Perissodactyla Owen, 1848

爪兽科 Chalicotheriidae Gill, 1872

爪兽亚科 Chalicotheriinae Gill, 1872

黄昏兽(新属) Hesperotherium gen. nov.

属型种 *Hesperotherium sinense* (Owen, 1870)。

特征 低冠型中等大小的爪兽,稍小于 *Chalicotherium grande*。门齿、犬齿和第一前臼齿全部退失,第二至四前臼齿强烈退缩,不臼齿化,臼齿方形,或宽大于长,外脊内缘伸达或超过牙齿中线,原尖大,孤锥状,无原小尖和原脊;下颌联合部向前急剧收缩,后缘伸达p4后端,水平支粗厚,向后不特别变高,p2～p4之长短于m3者,下臼齿后齿带很发育,m3者特别宽大。

分布 目前仅发现于中国晚上新世至中更新世(?)地层中。

词义 *Hesperos*,希腊文,黄昏;*Therion*,希腊文,兽。属名指该爪兽为整个爪兽类进入演化的黄昏阶段、行将灭绝的代表。

中华黄昏兽 Hesperotherium sinense (Owen, 1870)

(图1,2)

Chalicotherium sinense, Owen, 1870, p.429～432, pl. XXIX 7～10

Chalicotherium sinense, Matthew & Granger, 1923, p. 573

Nestoritherium sinense, Colbert & Hooijer, 1953, p.81～82

? *Nestoritherium sinense*, Huang & Fang, 1991, p.126, pl. XVI 4～12

正型标本 Brit. Mus. No. 41934,一右M3(1953年Colbert和Hooijer指定),确切产地不知,可能产自重庆附近早更新世的洞穴或裂隙堆积中。

特征 见属的特征。

本文记述标本 V 13503,下颌水平支中段,p2以前的部分缺失,带左p3～m3和右p3～m1,两侧p2仅保留齿根,和属于同一个体的右上颌残段,带部分M2残片及齿槽和完整的M3。

地点及层位 山西天镇东南约30km,台家坪东南约1.5km,古脊椎所野外地点80045地点。化石产于浅褐黄色含钙质结核之粉砂质亚砂土中,结核呈层状分布,粒径大者约10cm,化石呈鸡窝状分布。1980～1981年卫奇研究员曾在这个地点发现了相当多的哺乳动物化石(未正式发表)。经笔者初步鉴定,计有:*Canis chihliensis parmidens*、*Nyctereutes sinensis*、*Pachycrocuta licenti*、*Homotherium* sp.、*Megantereon nihewanensis*、*Lynx* sp.、*Felis* sp.、*Proboscidipparion sinense*、*Equus sanmeniensis*、*Coelodonta yanshanensis*、?*Rhinoceros* sp.、*Elaphurus bifurcatus*、*Gazella* sp.等。这个名单没有超出Teilhard de Chardin and Piveteau(1930)记述的泥河湾动物群的范围,其中既没有更古老的,也没有更新的类型出现,其时代很可能和典型的泥河湾相同,即早更新世。

描述 上牙中仅 M3 保存好,M2 仅保留外脊很小的一段,但后齿根的齿槽仍然保留。从保留的部分看,M2 比 M3 更宽,根据齿槽测量,其宽为 48.5mm。M3 已深度磨蚀。牙齿近方形,前、后缘接近平行。外脊磨蚀后出露的齿质面在中央已达牙齿宽的一半,外脊的其他部分则远远超过牙齿的中线,后尖的外壁向内伸展很远,延伸的方向几乎与牙齿长轴垂直,仅在最末端稍稍弯向后方。原尖孤锥形,后外壁有多个磨蚀面(至少 3 个),内壁接近陡直,其余三面倾斜,唇侧面倾斜最缓,在其前外方有一微弱的突起,应为残存的原小尖,它使原尖在基部与外脊相连,并使牙齿中凹和前齿带之后的凹分开,但不形成原脊。次尖与外脊连接,形成斜向内后方伸的后脊,已磨蚀近谷底。内中谷位于牙齿中线稍后,前齿带在外脊以内的部分保存,形成相当长的一段脊,与原尖以锐沟相分。原尖内壁齿带几乎完全消失,但在中谷谷口处发育,并将其封闭,后齿带的位置远比内齿带者高,在牙齿后缘的中部与外脊会合并形成浅的后凹,后齿带在外脊后端的外侧也较清楚,但不至唇缘即行消失,外侧没有齿带(测量见表 1、2)。

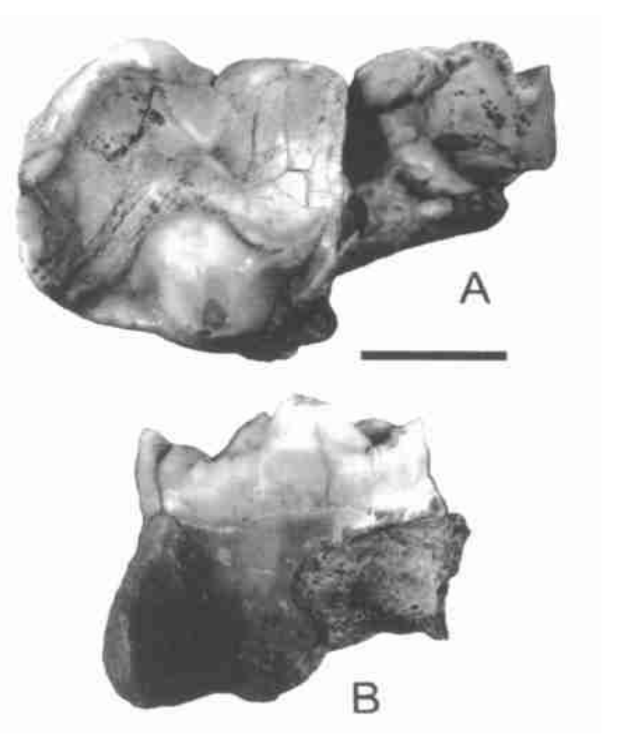


图 1 *Hesperotherium sinense*, V 13503,右上颌骨残段,带部分 M2 残片及其齿槽和 M3(比例尺 = 2cm)

Fig. 1 *Hesperotherium sinense*, V 13503, fragment of right maxilla with fragments of M2 and its alveolus and M3 (scale bar = 2cm)

A. 冠面视(crown view); B. M3 的内面视(lingual view of M3)

表 1 M3 的测量与比较

Table 1 Measurements and comparison of M3 (mm)

	Hesperotherium sinense			*Nestoritherium sivalense*
	Tianzhen V 13503	Type Owen, 1870	Wushan Huang et al., 1991	Siwaliks Falc. & Caut., 1868
外长 L (ext)	44	44.5	48	33[35.6]
内长 L (inn)	33.3	31.8		[26.7]
前宽 W (ant)	44.6	45.7	44.2	38.1[40.6]
后宽 W (post)	43.4	41.9		[34.3]

[ ]内为 Owen 所提供的数据,显然有误。

Figures included in [ ] are given by Owen, but evidently wrong.

下颌非常粗厚。左、右下颌支在联合部完全愈合。自顶面看,联合部在齿列之前的部

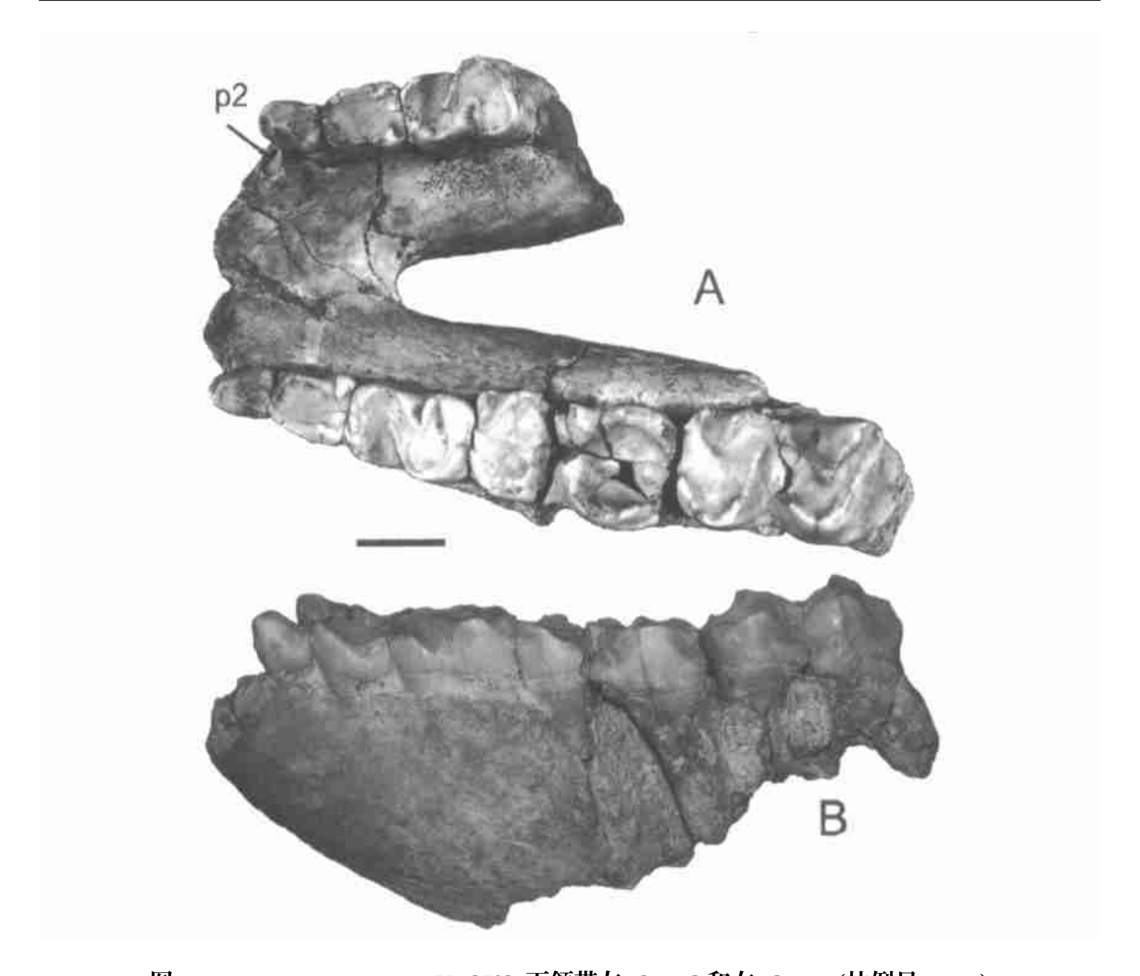


图 2 *Hesperotherium sinense*, V 13503, **下颌带左** p3～m3 **和右** p3～m1(**比例尺** = 2cm)

Fig. 2 *Hesperotherium sinense*, V 13503, lower jaw with left p3～m3 and right p3～m1 (scale bar = 2cm)

A. **冠面视**(crown view); B. **外侧面视**(lateral view)

分向前呈弧形急剧收缩,虽然联合部在齿列之前保留的部分很短,仅约 10mm,**但最前端的宽**(37)**就比** p3 **处的宽**(58.5)**小很多。自侧面看,联合部的下缘自前臼齿的下方就急剧向上抬升,致使保留的前端部分变得很低。联合部的顶面中央稍稍凹陷,向后下方倾斜弱,因此联合部的后端非常厚,达** 29mm。**自顶面看,联合部的后缘位于** p4 **后端。颏孔非常小,孔高仅** 4mm,**位于** p2 **齿根之前,离齿槽缘很近,仅约** 7mm。**水平支,从保留的部分看,非常粗厚,外面平,内面隆凸,在** m1 **处的厚度达** 42mm。

自下颌骨前端的破裂面上看不出任何牙齿或齿根的痕迹,这表明门齿和犬齿已经完全退失。全部下牙每侧只有 6 **枚。**p1 **显然也已完全退失。两侧的** p2 **都只保留齿根,齿根为单根,断面近圆形,左侧者长稍大于宽,且内侧中央还可见有很微弱的沟,右侧者无此沟**;p3 **自冠面看为圆角长方形,齿冠只有一个主尖,自主尖顶端的前外方斜向前内方伸出一脊,此脊不至齿冠基部即行消失,自主尖顶端向后伸出两条脊,外侧的一条显然是主脊,磨蚀后形成宽面,内侧的一条脊很微弱,两脊之间的面有微弱的纹饰,牙齿外面后方有一**

微弱的中纵沟,牙齿的后内角有一微弱突起,齿带仅在外侧面中纵沟之后微弱可见;齿根在齿冠之下仍为单根,内侧面上的中纵沟很深,外侧面上的不很清楚,齿根可能在末端分为两个。p4 在总的形态上和 p3 很接近,只是更大,外中纵沟、内后角的突起和中纵沟之后的外齿带更明显些,齿根显然为两根。所有下臼齿的冠面均为典型的爪兽形态:W 形。三角座自 m1 向 m3 逐渐加大,至 m3 已和跟座一样大了。m1 的下前脊,由于磨蚀很深而变得很短,后齿带细弱,在整个后缘发育;m2 的下前脊细长,一直伸至牙齿内缘,自其端部向后并有一齿带尖,将三角凹的前半部封闭,后齿带处破损,但从外侧保留的一段判断,它应该比 m1 者粗大;m3 的前内齿带比 m2 者更发育,后齿带非常宽大,呈架状。下齿列冠面磨蚀的情况很有趣。p2 的磨蚀情况不知,p3 是牙齿中磨蚀最轻的,m2 从冠面上看是磨蚀最深的,整个跟座磨蚀成一个很深的洞(可能是病态),其他三个牙(p4, m1 和 m3)磨蚀程度接近;但自内面看,它们的齿冠高度都大致相同。这表明 p3 的齿冠较其他牙齿为低,其他牙齿出齿间距可能较短。

表 2　下牙测量与比较

Table 2　Measurements and comparison of lower cheek teeth　(mm)

	Hesperotherium sinense			*Nest. sivalense*
	Tianzhen V 13503	Yanjinggou Colbert, 1934	Wushan Huang et al., 1991	Siwaliks * Falconer, 1868
p2～m3	153.8			141
p2～p4	39			49.2
m1～m3	111			94.6
p2	12 ×12			
p3	13.5 ×11.3			13.8 ×?
p4	18.2 ×15.3			19.4 ×11
m1	27.4 ×18.8		38 ×22 ?	24 ×13.4
m2	42.4 ×26.3		40.5 ×20.5 ?	32.3 ×19
m3	46.5 ×24.8	47 ×24		35.6 ×19

? 很难确定哪个是 m1,哪个是 m2,它们也不一定是中华黄昏兽这个种。

? Difficult to define whether they are M1 or M2, or they really belong to *H. sinense*.

* 系根据图版测量计算所得。

* Measured and calculated from plate.

比较与讨论　上述材料中 M3 无疑和 Owen (1870) 鉴定为 *Chalicotherium sinense* 的一个右 M3 最为接近。和 Owen 对这颗牙齿的极为精细的描述相对照,两者甚至在细节上都很一致。例如,外脊的形态,原尖大而孤立和原小尖几乎完全退失(在爪兽中只有 *Nestoritherium* 和龙担的标本有此特征),齿带的发育程度和位置等。但天镇的标本和 Owen 的正型也稍有差别:在天镇标本中前附尖和后附尖向外突出的程度相同,在正型中前附尖比后附尖稍更向外突出;在天镇标本中,其后尖,特别是其后端,变得更小,所以后尖的后脊几近一直线,而不呈明显的凹形,正型标本如果磨蚀更深的话,其外方的凹也会变小,但似乎不会如天镇标本那样直;此外,在正型标本中,在次尖内面上仍然可以看到有微弱的齿带,而在天镇标本中,此处没有齿带。上述这些区别非常细微,据此不足以把它们分成

不同的种。

相反,上述两个 M3 和发现于印度 Siwaliks 的 *Nestoritherium sivalense* 相比则有很明显的区别。首先,*N*. *sivalense* 的 M3 尺寸明显较小,根据图版测量长大于宽,但在测量表中却是宽大于长(见表 1,注意:Owen 提供的测量数字和 Falconer and Cautley 1868 年所提供的原始数据不同),其内后角比前内角更向内突出;其次,其后尖仍然较大,其后脊较直地伸向内后方,既不急剧向内,也不弯曲,因此后脊的末端仍然在牙齿中线之外,而且外壁也不形成凹陷;其原尖相对较小,内壁不接近垂直,其唇侧也不那么强烈地隆凸,离前齿带较远,它们之间的谷较宽阔。

Owen 的 *Chalicotherium sinense* 只有一个 M3,没有其他任何材料。但 *Nestoritherium sivalense* 有下颌。它和天镇的材料相比,差别更为显著:1) 在 *Nestoritherium sivalense* 中,联合部长,无论从顶面还是从侧面看,联合部向前收缩的程度都远低于天镇者,这从侧面看得更明显,其水平支下缘虽然斜向前上方,但很轻微,而且不强烈弯曲,联合部的后缘止于 p3 的中部,而不是 p4 后端。2) 颏孔多个,位置较前较低,在天镇标本中颏孔只有一个,小而位置靠上靠后。这表明随着门齿犬齿的消失,门齿区的血管萎缩。3) 在 *Nestoritherium sivalense* 中下犬齿仍然存在(至少在雄性中?),在天镇的标本中,连犬齿也退失了。4) 在 *Nestoritherium sivalense* 中下前臼齿退化程度较低,p2～p4 的长大大超过 m3 之长(见表 2);从保留的齿槽看,其 p2 仍然相当大,p4 臼齿化。5) 在 *Nestoritherium sivalense* 中下臼齿,特别是 m3 的后齿带微弱。

上面的对比使笔者相信,天镇所发现的材料和 Owen (1870) 的 *Chalicotherium sinense*,虽然可比的材料只有一个 M3,无疑应为同种,但不能把它归入 *Chalicotherium* 属中。*Chalicotherium*是欧亚大陆中中新世至晚中新世早期比较常见的一个属。在颊齿的基本形态上它确实和上述种相似,但其上臼齿有原小尖和原脊,上、下门齿和犬齿虽然已经变小,但仍然存在,前臼齿仍然较大,p4 冠面仍然为 W 型,p3 后半部 V 形清楚。天镇材料所显示的性状无疑是整个爪兽类沿着吻部缩短的演化方向不断进展的结果。它和 *Chalicotherium* 处在不同的演化水平上。

上面的对比还表明,它和 *Nestoritherium* 的差别也很明显,它显然比 *Nestoritherium* 更特化,因此也不能归入同一个属中,必须为它们另建一新属。考虑到这类动物已经非常接近整个爪兽类的最后演化阶段,即将最后灭绝,因此起名为黄昏兽。

一个很有意思的现象是,过去在我国新生代晚期地层中所发现的爪兽化石,由于发现的化石很破碎,大多被简单推定为 *Nestoritherium* (或 *Circotherium*)。

首先是四川盐井沟的一个下臼齿(Matthew and Granger, 1923; Colbert and Hooijer, 1953),先是被定为 *Chalicotherium sinense*,后来又被改为 *Circotherium sinense*,最后又被 Colbert 订正为 *Nestoritherium sinense*(详见 Colbert, 1935)。这颗牙齿在大小上与天镇者很接近(见表 1),在形态上也一致,因此可以把它归入到 *Hesperotherium sinense* 中。

1930 年 Teilhard de Chardin and Piveteau 记述了泥河湾少量爪兽化石。材料包括一段右上颌骨,带有 P4 和 M1 及 M2 的齿槽,和第二、第三指节骨,被定为? *Circotherium* sp.。遗憾的是,这些材料无法和天镇的材料直接对比。但至少可以看到,泥河湾材料中的臼齿宽大于长;其大小也和天镇者很接近。考虑到它们发现于同一地区,所属动物群的成员也基本一致,它们属于这一个属的可能性很大。但是否属同一个种还需要更多更好的材料

予以证实。

1978 年胡长康和齐陶记述了采自陕西蓝田公王岭地点的一件上颌残段,被鉴定为 *Nestoritherium sinense*。化石保存得很差,牙齿形态特征已无法辨认。它的 M1 的大小(38 × 38mm)显然比 *N. sivalense* 者大(27 ×27mm,见 Falconer and Cautley, 1868, p. 194)。从保存的原尖的形态、牙齿的轮廓和大小判断,归入 *Hesperotherium* 的可能性很大。

目前所知,最好的一批新生代晚期爪兽的材料采自重庆巫山龙骨坡(黄万波、方其仁等,1991)。化石共有 15 枚单个的牙齿。根据图版看,其中原定为 *Nestoritherium* sp. 的 DP3 (CV 948,图版 XVI,3) 应该是 *Tapirus* 的;其中一个归入 M3 (CV 948.7,图版 XVI,9) 的牙齿可能是 M2,因为它的后尖仍然很大。巫山标本中的 M3 在大小和形态上都很接近 Owen 的正型标本,但其中的两颗下臼齿却明显较窄小(见表 2)。把它们归入 *Hesperotherium* 属大概问题不大,但不一定就是 *H. sinense* 这个种。

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HESPEROTHERIUM - A NEW GENUS OF THE LAST CHALICOTHERES

QIU Zhan-Xiang

(*Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences* Beijing 100044)

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Summary

Chalicothere remains were only occasionally met in late Pliocene-middle Pleistocene deposits of China. Since they were usually very poorly represented, mostly by single teeth, identification was often highly tentative. Nevertheless, they were always identified as belonging to the genus *Nestoritherium* (formerly *Circotherium*). The latter was erected by Kaup in 1859 based on Falconer and Cautley's description of anterior parts of skulls and lower jaws from the Siwaliks, India.

On October 14th, 2000, the author had the opportunity to visit the fossil mammal localities in the Tianzhen County, Shanxi, accompanied by Prof. Wei Qi, who found and excavated these localities during the first years of the 1980s. Fortunately enough, some chalicothere fossils were found during the visit at the Loc. 80045, where typical Nihewan fauna were collected by Wei in 1980～1981. The new find of the chalicothere fossils turned out particularly important in clarification of the affinity of the Chinese chalicothere material so far referred to *Nestoritherium*. The new fossils show clearly that they materially differ from the Siwaliks *Nestoritherium* and deserve to be classified as a new genus, for which the name *Hesperotherium* is proposed, alluding to the pre-extinction stage of the Chalicotheiidae.

Hesperotherium **gen. nov.**

Type species *Hesperotherium sinense* (Owen, 1870).

Diagnosis Brachyodont chalicothere of medium size, slightly smaller than *Chalicotherium grande*. All incisors, cainines and first premolars lost, premolars strongly reduced, non-molariform, upper molars quadrate or wider than long, ectoloph extended to or surpassed mid-line of crown

width, with large, isolated, conic protocone, but no protoconule and protoloph; symphysis sharply reduced anteriorly, reaching at posterior end of p4 posteriorly, ramus considerably thickened, without becoming very high posteriorly, combined length of p2～p4 shorter than m3, lower molars with strong posterior cingulum, that of m3 shelf-like.

Distribution So far only found in late Pliocene to middle (?) Pleistocene deposits of China.

Etymology Hesperos, Greek, dusk; Therion, Greek, beast. The genus name *Hesperotherium* alludes to the last evolutionary stage prior to final extinction of the chalicotheres.

Hesperotherium sinense **(Owen, 1870)**

(Figs. 1, 2)

Chalicotherium sinense Owen, 1870, p. 429～432, pl. XXIX 7～10
Chalicotherium sinense, Matthew & Granger, 1923, p. 573
Nestoritherium sinense, Colbert & Hooijer, 1953, p. 81～82
? *Nestoritherium sinense*, Huang & Fang, 1991, p. 126, pl. XVI 4～12

Type specimen Brit. Mus. No. 41934, right M3 (chosen by Colbert & Hooijer in 1953), probably from cave or fissure-filling deposits, Chongqing, China.

Diagnosis As for the genus.

Described specimen V 13503, horizontal rami with anteriormost part of symphysis broken, left p3～m3, right p3～m1 and roots of both p2 preserved; a right M3 of the same individium.

Locality and geologic age IVPP Field Loc. 80045. Fossils found in brownish yellow sandy silt with calcareous concretions, diameter of larger concretions ～10mm, roughly layered in distribution. Prelimianry examination of the fossils collected by Prof. Wei Qi during 1980～1981 gave the following list: *Canis chihliensis parmidens*, *Nyctereutes sinensis*, *Pachycrocuta licenti*, *Homotherium* sp., *Megantereon nihewanensis*, *Lynx* sp., *Felis* sp., *Proboscidipparion sinense*, *Equus sanmeniensis*, *Coelodonta yanshanensis*, ? *Rhinoceros* sp., *Elaphurus bifurcatus*, *Gazella* sp. All the forms above listed are neither more archaic, nor more advanced, than those of the typical Nihewan fauna described by Teilhard de Chardin et Piveteau in 1930. Thus the geologic age of the Loc. 80045 can roughly be considered as contemporary as that of the typical Nihewan: early Pleistocene.

Brief description and comparison The Tianzhen M3 is almost identical with the type M3 minutely described by Owen (1870) in both size and morphology. The minor differences are: 1) The parastyle and mesostyle are equally outward protruded in the Tianzhen specimen, while the parastyle is more protruded than the mesostyle in the type specimen. 2) In the Tianzhen specimen the metacone part of the ectoloph is almost straight and almost perpendicular to the long axis of the dentition, with a very small posterior end which turns backward, whereas the posterior end of the metacone which turns backward is larger and the external wall of the metacone is concave in the type specimen. 3) There is no cingulum on the inner side of the hypocone in the Tianzhen specimen, whereas a cingulum is weakly developed there in the type.

On the other hand, both above described M3 are sharply different from that of *Nestoritherium*. The M3 of *Nestoritherium*, as depicted by Falconer (1868), is longer than wide (but see table 1), with its metacone part of the ectoloph roughly diagonally extended relative to the long axis of the tooth, instead of being almost perpendicular as in the Tianzhen and Owen's M3.

The Tianzhen lower jaw is very heavily built, with an exceedingly shortened symphysis. The lateral borders of the mandibles turn sharply mesially immediately anterior to the p2, and the lower border of the symphysis turns sharply upward, seen from the lateral side. The mental foramen is single, small, and situated high, immediately below and anterior to the p2. All this indicates that the symphysis anterior to the p2 must be very short, in accord with the complete loss of the incisors and canines. The posterior border of the symphysis is located at the level of the posterior end of the p4. This is quite different from the symphysis of *Nestoritherium*, which has a rather long symphysis, provided with multiple mental foramina and a pair of canines. The posterior border of the symphysis in *Nestoritherium* is located at the middle of the p3. All the lower premolars are strongly reduced in

the Tianzhen specimen: the combined length of p2～p4 is smaller than that of m3, p2 is single-rooted, round in cross-section, p3～p4 non-molariform, p4 with only its posterior half V-shaped. *Nestoritherium* has rather long p2～p4, combined length of which is much longer than m3. Its p4 remains molariform, i. e., still W-shaped in crown view. The lower molars in the Tianzhen specimen are all with well developed posterior cingula, especially in m3, where it is shelf-like. In *Nestoritherium* the posterior cingulum is only weakly developed in the lower molars.

All this clearly shows that the new genus *Hesperotherium* has reached at a far higher level in shortening of snout and reduction of anterior teeth, an evolutionary trend invariably demonstrated in Chalicotheriidae as a whole, than *Nestoritherium* did.

A cursory examination of the materials reported from late Pliocene-middle Pleistocene deposits of China and referred to *Circotherium* or *Nestoritherium* convinced the author that most of these specimens, if not all, ought to be transferred to the new genus *Hesperotherium*.

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